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ABSTRACT

In the first part of this paper, the current status of criterion-related validity research in the field of career development assessment is analyzed. It is shown that the results of intermediate and long-term follow-up studies--in contrast to studies in the same educational setting--provide only little evidence for the assumption that career maturity in school has substantial impact on later career adjustment. In this analysis it is pointed out that several factors are responsible for this situation, particularly deficiencies in the use of career maturity measures as predictors and shortcomings in the selection of criterion measures and in theory. In addition, it is suggested that further factors like self-concept orientation in choice and realization of career plans might function as mediating variables between career development in school and career adjustment. In the second part of the paper the results of two follow-up studies aimed at testing the empirical appropriateness of these assumptions, conducted on 223 apprentices and 172 university students, are reported. The findings correspond mainly with the theoretical expectations. Self-concept orientation appeared as the most important intervening variable. The consequences of the results for further research in this field are discussed. (Author)

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Measures of Career Development and Career Adjustment: In Search of Mediating Variables

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Abstract

In the first part of the paper the current status of criterion-related validity research in the field of career development assessment is analyzed. It is shown that the results of intermediate and long-term follow-up studies - in contrast to studies in the same educational setting - provide only little evidence for the assumption that career maturity in school has substantial impact on later career adjustment. In the following analysis it is pointed out that several factors are responsible for this situation, particularly deficiencies in the use of career maturity measures as predictors and shortcomings in the selection of criterion measures and in theory. In addition, it is suggested that further factors like self-concept orientation in choice and realization of career plans might function as mediating variables between career development in school and career adjustment. - In the second part of the paper the results of two follow-up studies aimed at testing the empirical appropriateness of these assumptions, conducted on 223 apprentices and 172 university students, resp., are reported. The findings correspond mainly with the theoretical expectations. Self-concept orientation appeared as the most important intervening variable. The consequences of the results for further research in this field are discussed.

Measures of Career Development and Career Adjustment: In Search of Mediating Variables

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There are many reasons why it seems important to investigate the relationships between measures of career development and career adjustment:

First, for a relatively long period of time the efforts in the field of career development assessment focused mainly on the construction of psychometrically sound instruments and on aspects of construct validity. Only in recent years it has become increasingly evident that the investigation of criterion-related validity of these measures is of importance for theoretical and practical reasons, too (cf. Westbrook et al., 1985; Betz, 1988; Seifert, 1989). However, the results of the relatively small number of validity studies with career adjustment criteria raise many fundamental questions.

Second, the theoretical adequateness of the career maturity concept rests to a large scale on the assumption that the age and experience-related level of career development in one career stage is predictive for success in coping with the developmental tasks of the further career stages. In the case that no reliable evidence for this assumption would be found, the value of career development theory could be seriously questionned.

Third, the practical utility of career maturity instruments for purposes of career counseling would be considerably limited if no prediction could be made beyond the first career decision making in adolescence. Of course, the assessment of the status of career development and of the individual counseling needs is important for itself. However, the quality and the appropriateness of this decision must have consequences for further career development and future decisions. For example, Austrian first year university students show a relatively high degree of career uncertainty, though they have just made the decision for a university education. On the other hand, it seems remarkable that the drop-out rates among Austrian university students vary between 4o% and 7o%, which is quite disturbing. It is plausible to assume that the difficulties of the students to deal effectively with the academic and psychosocial demands of university education are at least partly caused by the inadequate career decision making at the end of secondary education and so it is important, from my point-of-view, to have instruments which can predict these difficulties.

To contribute to the clarification of the relationship between career development in school and career adjustment, I will deal in my presentation with two issues: first, I will review the major findings and issues of criterion-related validity research in this field, and second, I will propose a theoretical and structural model

to overcome the difficulties in making intermediate and long-term career predictions on the basis of developmental measures.

Findings and Problems of Criterion-related Validity Research

For pre-occupational periods of time and during education within the same educational setting mostly positive relationships between career maturity measures and criterion-measures were found. For example, there is clear evidence that career maturity relates positively to indicators of crystallization of preferences (Savickas, 1985; Blustein, 1988; Seifert, 1991), to identity formation (Helbing, 1984; Graef, Wells, Hyland & Muchinsky, 1985; Blustein, 1988; Seifert, 1991), to the rational decision making style (Jepsen & Prediger, 1984; Blustein, 1987), and to academic achievement in school or college (Schweikart, 1981; Alvi & Khan, 1982). Several studies show that career maturity measures also predict career choice concerns (in the negative direction), decidedness for a career or occupation, and self-assessed appropriateness and certainty of realization of preferences or career plans (Lokan, 1984; Westbrook et al., 1985, Seifert, 1986, 1991; Blustein, 1988). Westbrook (1988, 1990) reported significant relationships between the Career Maturity Inventory (CMI) Competence subtests "Goal selection" and "Self-Appraisal", on the one hand, and measured appropriateness of choice and accuracy of self-estimate scores on the Differential Aptitude Test on the other hand.

Considerably less clear or even contradictory results emerged in studies which investigated whether career maturity measures in school or college predict aspects of career adjustment in a following career stage.

In a short-term follow-up study Dupont (1990) found that the Career Development Inventory (CDI) scales, with the exception of the scale Career Exploration, predict perseverance or stability of career in the first year after graduation from Canadian high schools. In contrast, only the scale Career Planning correlated significantly with career satisfaction.

Medium-term criterion measures were used by Noeth (1983) and in two studies by Seifert. Noeth investigated whether the additional use of career development measures would enhance the predictability of the actual occupation from expressed interests two years after graduation from high school. However, the data did not confirm this expectation. In the first of my own studies (Seifert, Bergmann & Eder, 1987), conducted with former students of lower general secondary schools, significant correlations were found between the Austrian CDI, the EBwA-Attitude scale and a self-congruence scale in school on the one hand and vocational training success, occupational and career satisfaction, work salience and intended career stability on the other hand. The second follow-up study was done with former senior high school students three years after graduation (Seifert, 1990). The career maturity scores of the subsample of university students, collected

in the last two years in school, predicted motivational orientation in final career choice, realization of career plans, choice satisfaction, career uncertainty, intended career stability (persistence) and clarity of future career plans and aspirations, but not academic success and satisfaction.

The most extended studies were done by Collins (1985), Herr et al. (1982) and Niles & Herr (1989). The first found that career maturity scores of college students correlate significantly but low with job satisfaction nine years later ($r = .19$). Similarly, significant but low correlations were reported by Herr and his associates between the CMI-Attitude Scale in school and the Adults Career Concern Inventory administered at the age of about 25.

In a further study conducted by Thompson & Lindeman (see Super, 1990) some 600 boys and girls, tested with the CDI in their final year in secondary school, were followed up three and five years later. Super (1990) reports that so few correlations were significant that the authors were forced to conclude that the scales of the CDI had no predictive validity for career status or coping either three or five years after leaving school.

What are the reasons for the very mixed results of the empirical studies, particularly with regard to intermediate or long-term prediction, and what conclusions can be drawn to improve the quality and the prospects of criterion-related validity research in this field? One matter seems to be clear, from my

point of view: There is no one single or straightforward answer because the potential influence of career development in adolescence on career development in adulthood is interwoven into the life-career development and the changes of person-situation interactions caused by the processes of occupational and organizational socialization when entering new behavioral settings (see Schein, 1971, 1978; Seifert, 1989). Therefore, it may be asked, as Super did in 1990: What is defective - theory, predictor measures, or criterion measures?

Starting with the aspect of predictor measures, it has to be realized that the relationships among the different measures, developed up to now, have been only partly clarified (Seifert, 1989, 1991). In our own studies, e. g., we found substantial correlations only between the CDI scale Career Planning and the EBwA subscale Decisiveness/Certainty, and moderate correlations between the cognitive CDI scale Decision Making and the attitudinal EBwA scale Value Orientation. The correlations among the other career maturity scales are rather low. Savickas (1990) has suggested that the CMI-AS, which was the basis of the EBwA-Scale, measures coping resources and the CDI coping responses. However, it is difficult to apply this explanation to our results. In any case, I think, it is necessary to use several career development measures, preferably in a multitrait-multimethod approach (Campbell & Fiske, 1959), and not only one measure like the total score of the CMI-AS.

With regard to the criterion measures, I want to point out first of all that in most studies only a very limited number of criterion variables was used, which cannot be regarded as sufficient. This is probably connected with the fact that the selection of variables is mostly not sufficiently theory-based. Without referring to the developmental tasks in the following career stages as pointed out, for example, in the taxonomies of Campbell & Heffernan (1983) or Crites (1979), the degree of comprehensiveness and appropriateness of the selected criteria cannot be estimated adequately. In addition, it is to be mentioned that reliability estimates of the criteria are seldom reported, and that validity aspects are seldom discussed. For example, how reliable are teacher ratings of career developmental aspects of students? Furthermore: What is more indicative for appropriate career choice and career adjustment: accuracy of self-estimates of abilities, objectively measured appropriateness of career choice, or self-concept congruence (cf. Westbrook, 1990)?

The most important shortcomings probably refer to the state of theory. Basically, it has to be stated that the assumed impact of career maturity in adolescence on career development after leaving school and career adjustment has not been thoroughly analyzed up to now. Some authors take the view that career maturity is basic to sound career decision making and realism of choice, and therefore, it is concluded that career maturity measures should be positively correlated, e. g., to career

satisfaction and career progress. An alternative explanation would be that the assumed influence rests on the continuing effect of learned career related attitudes (e. g. work attitudes and work values), and cognitive or performance competencies and skills which have been developed in adolescence (cf. Mitchell & Krumboltz, 1984). Savickas (1990) and Super (1990) have proposed that short-term prediction is more convenient than long-term prediction because short-term criteria are less influenced by intervening variables and because the construct of career maturity refers primarily to career choice at the end of schooling. Also, they have suggested that psychologically similar or identical characteristics are better predictable by the corresponding career development measures, for example, career attitudes by career choice attitudes.

In my opinion, two additional aspects have to be taken into account: first, the degree of similarity of life-career situation between the predictive and the predicted situation, and second, the potential influence of mediating variables. In regard to the first issue I want to point out that it is usually much easier to make predictions if the subject remains in the same behavioral setting, for example, within an educational setting. After transition into a largely different behavioral setting, e. g., from school to the labor force, the correlations generally drop drastically. I will deal with the second aspect in detail in the following.

The Impact of Mediating Variables on the Relationships between Career Maturity and Career Adjustment

The starting point of my efforts to improve the understanding of the relationships between career development in adolescence and career adjustment in adulthood was the consideration that the assumption of direct causal relationships is probably too simplistic. Apart from the fact that sex differences and differences among academic majors are moderating this relationship, it was assumed that the kind and the degree of influence possibly depends on additional personal and situational conditions.

In this regard the process of final career decision making and its outcomes, and also the mastering of the transition from school to higher education or working life, seem to be of special importance. When asking, for example, in which situations no essential (positive) impact of career maturity on the immediate following career development can be expected, particularly the following answers are possible: first, if the person has been guided or forced into a more or less disliked or non-congruent career or occupation, and second, if he or she was guided in final decision making primarily by chance events or unspecific and extrinsic occupational characteristics, and that, therefore, the degree of correspondence of the selected career or occupation with his or her own personality and interests was not taken into account. In both cases, the career-related exploratory and planning activities and the cognitive competencies as measured by career maturity

instruments cannot affect the quality of career decision. Therefore, it may be assumed that the following conditions are interfering with the effects of career maturity:

(1) the degree of intrinsic, extrinsic and context or situational orientation in career choice motivation, (2) the objective and subjective chances of independent (autonomous) decision making respectively of the degree of environmental pressure to select a certain alternative, (3) the degree of realization of one's career aspirations, if they may be regarded as more or less appropriate. On the other hand, there is evidence that persons who show an insufficient or defective career adjustment, and a tendency to career instability, generally perceive their career, occupation or job as not appropriate or congruent with their personality and their career goals (at least as long as they do not change their goals and values or their estimation of appropriateness).

For demonstrating the empirical appropriateness of these assumptions, I will outline the corresponding results of two research studies.

The first study (Seifert & Eder, 1991) was conducted with 223 apprentices in the third year of training. To gain data on the status of career development at the end of schooling, the subjects were asked to answer retrospectively the items of four scales derived from the CDI-scales Career Planning and Career Exploration: activity of planning, information on the preferred occupation, use

of information resources and utility of resources. Also, a 3-item scale concerning the degree of specific vocational choice orientation (e. g., length of time considering the preferred occupation, self-assessed appropriateness of preference) was applied. In order to measure the motivational choice orientation the subjects were required to assess the importance of 15 possible reasons for selecting their current occupation. For the purpose of this study only the subscale intrinsic or self-concept orientation, including the aspects occupational knowledge, abilities, occupational interests, and self-realization prospects (ability utilization), and additionally the item "I did not have another choice" were used. Furthermore, data concerning vocational training success, work satisfaction, career satisfaction, work values expectations, and intended career stability were collected from the subjects.

The results show particularly the following: (1) The variables general vocational choice orientation and specific choice orientation correlate significantly with the criterion-variable self-concept orientation in deciding for the current occupation, and partly also with the criterion realization of vocational preference. For the first criterion variable the multiple correlation coefficients are for the male and the female subsample .61 and .49, respectively, and for the second for the female subgroup .41.

(2) The variables self-concept orientation and realization of preference correlate as expected significantly with all other criterion measures besides one exception.

(3) The relationships between the most important predictor variables and the criterion variables become particularly evident when looking at the results of the hierarchical regression analyses, using the variables of general and specific vocational choice orientation as first predictor set and the variables of motivational orientation as second set, and also by the results of a causal (structural) model tested by path analysis: (i) By adding the motivation variables to the developmental variables (see Table 1) the degree of prediction could be significantly improved for the criteria realization of choice, training success, work satisfaction, career choice satisfaction, chances of value realization, and intention to change the occupation (mostly both for males and females).

Insert Table 1 about here

(ii) The additional use of the variable realization of choice, however, affected only the criterion career choice satisfaction. (iii) The results of path analysis, using a recursive model, confirm these results (see Figure 1): With the exception of the connection

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Insert Figure 1 about here

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between general choice orientation and achievement level in vocational school, no direct paths at the 5 % level could be found between the career development variables and the career adjustment variables. However, by the mediating effect of self-concept orientation important indirect influences of general and specific vocational choice orientation were revealed. (iv) Specific choice orientation, together with sex, contributes significantly also to the explanation of perception of choice alternatives and, by this way, also to implementation of choice and career choice satisfaction. Furthermore, I want to point out that by using the mediating variables together with the adjustment criteria career choice satisfaction and training success the intended career stability or instability can be predicted to a relatively high degree ($R = .62$ for the male and $R = .79$ for the female subgroup). Finally, it deserves attention that academic achievement in general secondary school is significantly associated only with achievement in vocational school, thus again demonstrating the outstanding importance of career choice orientation and choice motivation for career adjustment in the period of vocational training.

The second study I want to refer to is the follow-up study with former high school students I have already mentioned (Seifert, 1990). The results of this study show that career maturity scores collected in the last two grades in high school predict similar as in

the first named study self-concept orientation in final career choice, realization of career plans, career choice satisfaction, and also career stability, career uncertainty, and clarity of career plans. The multiple correlation coefficients for these criteria, including sex and grade average, vary between .29 and .47 (predictor scores of grade 11) and between .32 and .47 (predictor scores of grade 12). In order to examine whether the explained variance could be significantly improved by adding the orientation toward preference set and the self-concept orientation variable, hierarchical regression analyses were again calculated. The first assumption was confirmed for the criteria career uncertainty, intention to change the major and clarity of career plans and aspirations, and the second for all criteria, even for the criteria academic success and satisfaction.

In this case too the central relationships emerged very clearly in the corresponding structural model which was tested by LISREL (Jöreskog & Sörbom, 1986) (see Figure 2 and 3)[1]: From the

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Insert Figure 2 and Figure 3 about here

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two dominant predictor sets of grade 11 - "career planning/decisiveness/certainty of realization" and "value orientation in vocational choice" - significant paths lead to self-concept orientation ("intrinsic choice orientation") and from this intermediate variable to the latent criterion "career adjustment" (satisfaction/subjective career stability). The first latent predictor

variable affects also directly the variables of career adjustment. The relationships on the basis of the predictor data of grade 12 are similar to those of grade 11 (see Figure 3).

Discussion

On the whole, the results of our studies demonstrate that both the understanding of the supposed impact of career development in school on career adjustment in the following career stage or substage and the predictive power of career maturity measures can be considerably improved by examining relevant mediating processes. In spite of the differences in procedure and sample, in both studies intrinsic or self-concept choice orientation emerged as the most important intervening variable. For most criterion measures the indirect influence by this variable appeared as more significant than the direct influence. The realization of preferences, however, exerted essential influence only in the study with apprentices, probably because at the time of this study the number of available training places was very restricted for graduates from lower secondary schools and also, because career choice appears to be more definite for this group than the selection of a university major for high school graduates. The retrospectively assessed importance of self-concept orientation indeciding for the current occupation or major may also be considered as indicative for self-congruence of the chosen occupation, one of the most important aspects of career self-

assessment and, therefore, also of career choice satisfaction. Furthermore, in combination with the degree of context or situational orientation in decision making it may reveal the degree of self-determination in relation to determination by environmental forces or barriers which deserves from my point of view more attention in career development research than up to now.[2]

Of course, the empirical basis for these assumptions should be broadened, especially since the mentioned studies show several limitations which are possibly restricting the generalizability of the results (see Seifert, 1990, 1991). Particularly, to crossvalidate the results further follow-up studies with different samples of students of secondary schools and with apprentices and university students, respectively, are absolutely necessary. Finally, I would like to express my belief that further progress in career development research, extending into the stages of establishment and maintenance, will depend on the fact whether it will be possible to combine career development and self-concept theory with relevant theories of decision making, role or stage transitions, work adjustment and occupational socialization, and to find psychologically meaningful linkages between these theories or models. This probably would also provide better chances of prediction than by continued investigations of the direct relationships between career maturity measures and adjustment measures.

Notes:

[1] In this analysis only the most important predictor and criterion variables were included.

[2] However, on the basis of our results it has to be concluded that the degree of extrinsic motivation is almost independent from the degree of intrinsic motivation. An essential positive relationship resulted only with the aspect of career concerns on employment prospects.

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Table 1

Hierarchical Set Multiple Regression Analysis for Criteria of Career Adjustment

(from Seifert & Eder, 1991)

Predictor-variables	Males				Females			
	Multipl. R	R^2	R^2 change	F change	Multipl. R	R^2	R^2 change	F change
Realization of choice								
CO	.24	.06	.06	1.88	.41***	.17	.17	5.57**
+ CMOT	.51***	.26	.20	12.23***	.65***	.42	.25	17.81***
+ AS	.53***	.28	.01	1.75	.65***	.42	.00	0.54
CMOT	.48***	.23	-	-	.63***	.40	-	-
Achievement in vocational school								
CO	.21	.05	.05	1.43	.19	.04	.04	1.04
+ CMOT	.25	.06	.02	0.80	.24	.06	.02	0.96
+ AS	.37*	.13	.07	7.30**	.52***	.27	.22	24.01***
+ RC	.38(*)	.14	.01	0.99	.53***	.28	.00	0.38
CMOT	.12	.01	-	-	.18	.03	-	-
Training success at the working place								
CO	.25	.06	.06	2.09	.33*	.11	.11	3.54*
+ CMOT	.44***	.20	.13	7.41***	.36*	.13	.02	0.95
+ AS	.45**	.20	.00	0.49	.40*	.16	.03	2.60
+ RC	.45**	.20	.00	0.11	.40*	.16	.00	0.00
CMOT	.44***	.19	-	-	.23(*)	.05	-	-
Occupational satisfaction								
CO	.20	.04	.04	1.30	.18	.03	.03	0.98
+ CMOT	.30	.09	.05	2.44(*)	.40*	.16	.12	5.99**
+ AS	.30	.09	.00	0.00	.40*	.16	.00	0.14
+ RC	.36(*)	.13	.04	3.94*	.40*	.16	.00	0.04
CMOT	.28*	.08	-	-	.38***	.14	-	-

Table 1 continued

Predictor-variables	Males Multipl. R	R^2	R^2 change	F change	Females Multipl. R	R^2	R^2 change	F change
Career choice satisfaction								
CO	.28(*)	.08	.08	2.54(*)	.27(*)	.07	.07	2.16(*)
+ CMOT	.55***	.31	.23	14.74***	.52***	.27	.19	10.88***
+ AS	.55***	.31	.00	0.00	.52***	.27	.00	0.07
+ RC	.61***	.37	.07	9.10**	.54***	.29	.03	3.14(*)
CMOT	.54***	.29	-	-	.51**	.26	-	-
Value realization								
CO	.31*	.09	.09	2.98*	.17	.03	.03	0.87
+ CMOT	.43**	.18	.09	4.56**	.33(*)	.11	.08	3.45*
+ AS	.43**	.19	.01	0.61	.33	.11	.00	0.01
+ RC	.47**	.22	.03	3.02(*)	.33	.11	.00	0.15
BW-MOT.	.39***	.15	-	-	.32**	.10	-	-
Intention to change occupation								
CO	.21	.05	.05	1.15	.24	.06	.06	1.26
+ CMOT	.44**	.20	.15	6.43**	.37(*)	.14	.08	2.88(*)
+ AS	.45*	.20	.00	0.29	.38	.15	.01	0.45
+ RC	.47*	.22	.02	1.99	.40	.16	.02	1.18
+ AVS	.49*	.24	.02	1.56	.49	.24	.07	5.38*
+ TS	.50*	.25	.01	1.09	.55*	.30	.06	5.02*
+ OS	.62**	.38	.13	4.28**	.79***	.62	.32	14.96***
CMOT	.41***	.17	-	-	.39**	.13	-	-

Legende:

CO = Choice orientation; CMOT = Choice motivation; AS = Achievement in school; RC = Realization of choice; AVS = Achievement in vocational school; TS = Training success at the working place; OS = Occupational satisfaction.
(*) = $p < .10$; * = $p < .05$; ** = $p < .01$; *** = $p < .001$

Figure 1

A Path Model of the Influence of Career Development in School on Career Adjustment in Vocational Training

(from Seifert & Eder, 1991)

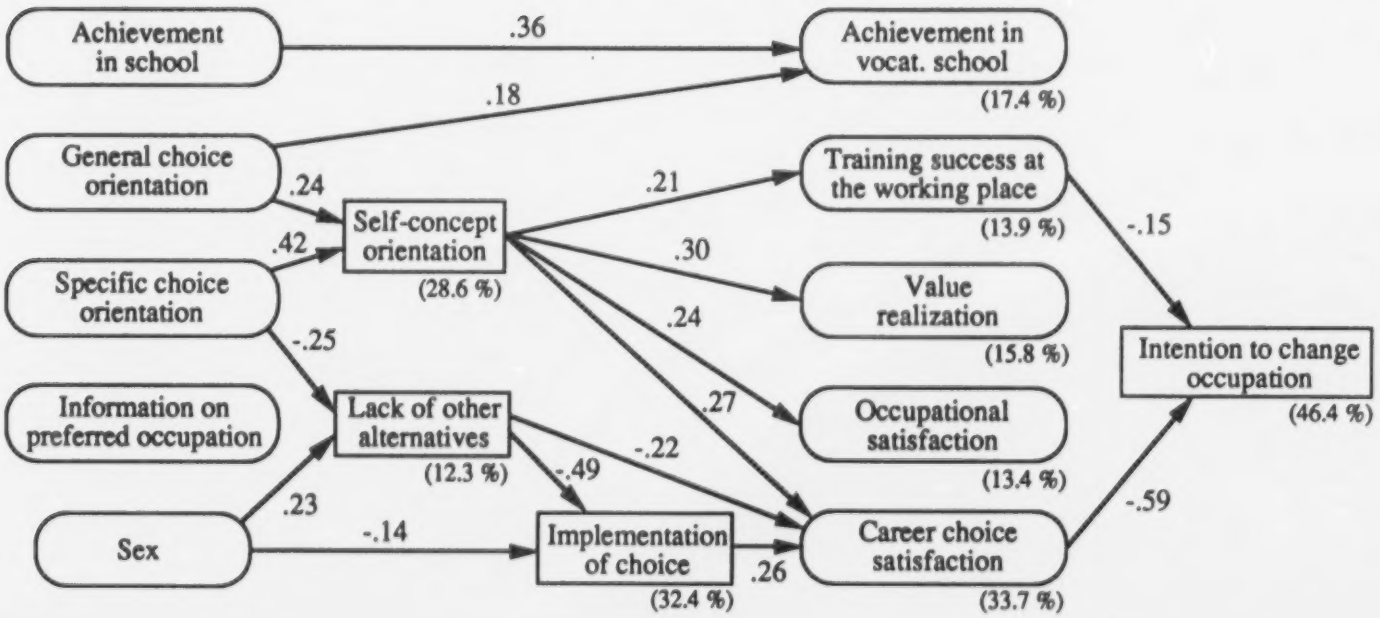
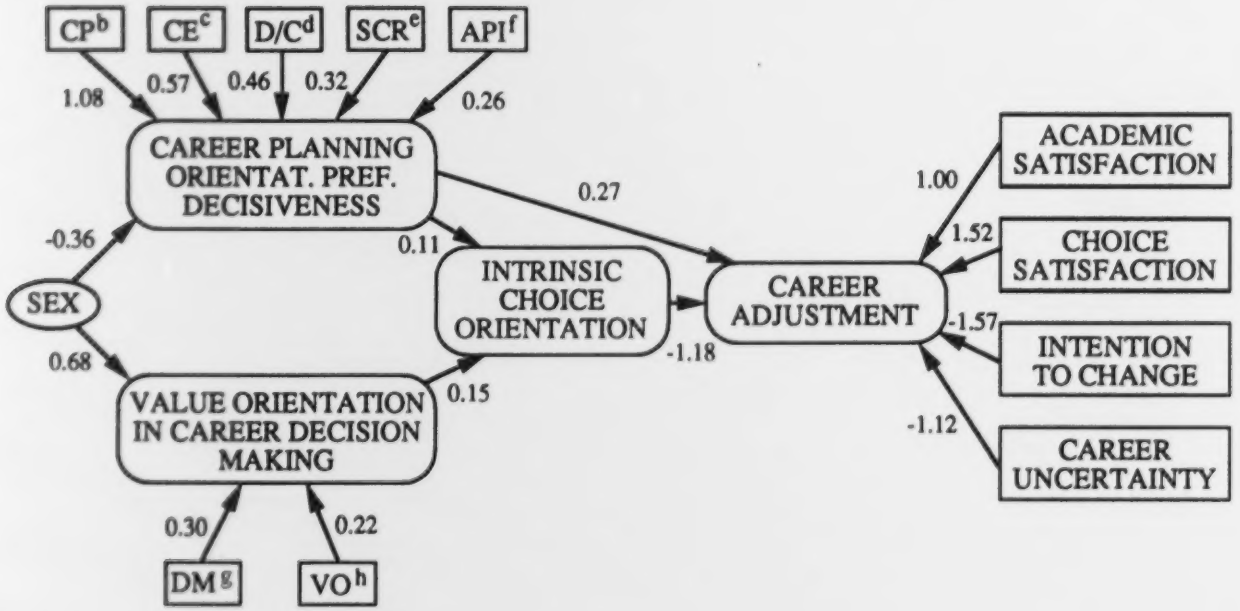


Figure 2

A Structural Model of Career Development in Transition from School to University[a]

(tested by LISREL VI)



Legend:

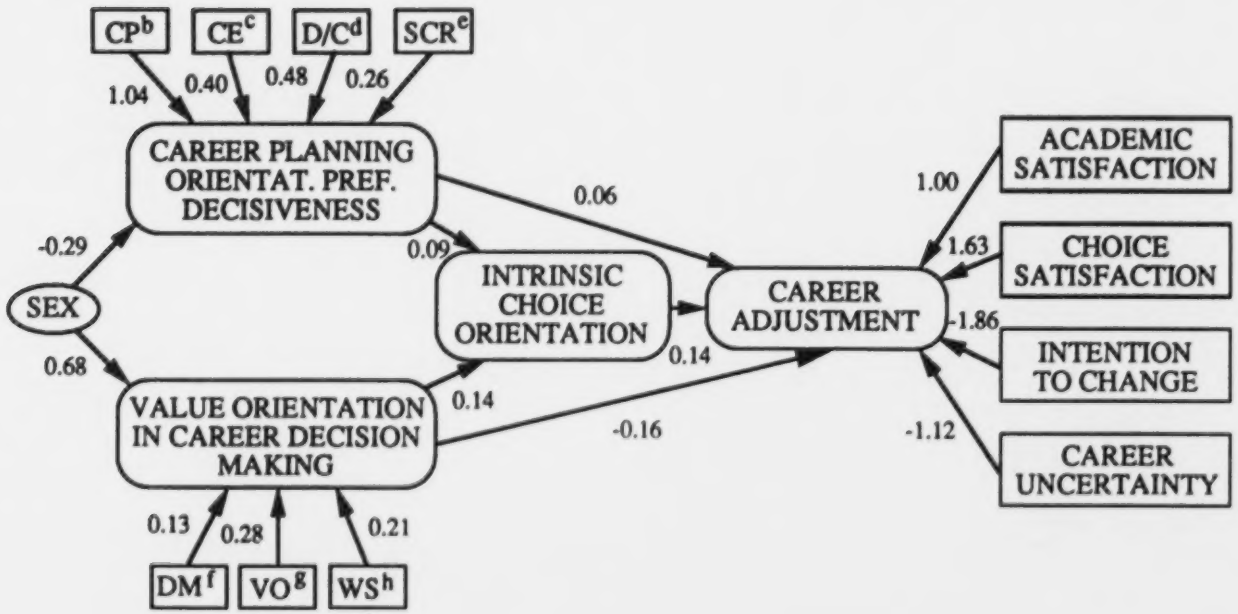
a Predictor variables were measured in grade 11, criterion variables three years after graduation from high school;
b CDI scale Career Planning; c CDI scale Exploration; d EBwA scale Decisiveness/Certainty; e Self-confidence in meeting study requirements; f Self-reported appropriateness of preferences to occupational interests;
g CDI scale Decision Making; h EBwA scale Value Orientation.

Goodness-of-Fit Measures: Chi-square = 87.3; Degress of freedom = 41; p = .01; Goodness-of-fit index = 0.86; Root mean square residual = 0.11; Coefficient of determination for structural equations = 0.252; Maximum modification index < 5.0.

Figure 3

A Structural Model of Career Development in Transition from School to University[a]

(tested by LISREL VI)



Legend:

a Predictor variables were measured in grade 12, criterion variables three years after graduation from high school;
b CDI scale Career Planning; c CDI scale Exploration; d EBwA scale Decisiveness/Certainty; e Self-confidence in meeting study requirements; f CDI scale Decision Making; g EBwA scale Value Orientation;
h EBwA scale Work Salience.

Goodness-of-Fit Measures: Chi-square = 89.2; Degress of freedom = 51; p = .04; Goodness-of-fit index = 0.84; Root mean square residual = 0.12; Coefficient of determination for structural equations = 0.143; Maximum modification index < 5.0.